

SEQUENCE LISTING

<110> TURPEN, Thomas H.

<120> VIRAL AMPLIFICATION OF RECOMBINANT
MESSENGER RNA IN TRANSGENIC PLANTS

<130> 008010103DVUS02

<140> To Be Assigned

<141> 2001-08-14

<150> 09/414,916

<151> 1999-10-08

<150> 08/336,724

<151> 1994-11-09

<160> 3

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1824

<212> RNA

<213> Tobacco Mosaic Virus

<220>

<221> CDS

<222> (70)...(873)

<223> (episomal) peptide encodes fo TMV 30kDa movement
protein (268 residues) and CAT (204 residues).

<221> CDS

<222> (916)...(1530)

<400> 1

guauuuuuuac aacaauuacc aacaacaaca aacaacaaac aacauuacaa uuacuauuuu 60

caauuacau aug gcu cua guu guu aaa gga aaa gug aa uuc aau gag uuu 111

Met Ala Leu Val Val Lys Gly Lys Val Asn Ile Asn Glu Phe

1

5

10

auc gac cug aca aaa aug gag aag auc uua ccg ucg aug uuu acc ccu 159

Ile Asp Leu Thr Lys Met Glu Lys Ile Leu Pro Ser Met Phe Thr Pro

15

20

25

30

gua aag agu guu aug ugu ucc aaa guu gau aaa aua aug guu cau gag 207

Val Lys Ser Val Met Cys Ser Lys Val Asp Lys Ile Met Val His Glu

35

40

45

aa u gag uca uug uca gag gug aac cuu uuu aaa gga guu aag cuu auu 255

Asn Glu Ser Leu Ser Glu Val Asn Leu Phe Lys Gly Val Lys Leu Ile

50	55	60	
gau agu gga uac guc ugu uua gcc ggu uug guc guc acg ggc gag ugg Asp Ser Gly Tyr Val Cys Leu Ala Gly Leu Val Val Thr Gly Glu Trp 65 70 75			303
aac uug ccu gac aaU ugc aga gga ggu gug agc gug ugu cug gug gac Asn Leu Pro Asp Asn Cys Arg Gly Gly Val Ser Val Cys Leu Val Asp 80 85 90			351
aaa agg aug gaa aga gcc gac gag gcc acu cuc gga ucu uac uac aca Lys Arg Met Glu Arg Ala Asp Glu Ala Thr Leu Gly Ser Tyr Tyr Thr 95 100 105 110			399
gca gcu gca aag aaa aga uuu cag uuc aag guc guu ccc aaU uau gcu Ala Ala Ala Lys Lys Arg Phe Gln Phe Lys Val Val Pro Asn Tyr Ala 115 120 125			447
aua acc acc cag gac gcg aug aaa aac guc ugg caa guu uua guu aaU Ile Thr Thr Gln Asp Ala Met Lys Asn Val Trp Gln Val Leu Val Asn 130 135 140			495
auu aga aaU gug aag aug uca gcg ggu uuc ugu ccg cuu ucu cug gag Ile Arg Asn Val Lys Met Ser Ala Gly Phe Cys Pro Leu Ser Leu Glu 145 150 155			543
uuu gug ucg gug ugu auu guu uau aga aaU aaU auu aaa uua ggu uug Phe Val Ser Val Cys Ile Val Tyr Arg Asn Asn Ile Lys Leu Gly Leu 160 165 170			591
aga gag aag auu aca aac gug aga gac gga ggg ccc aug gaa cuu aca Arg Glu Lys Ile Thr Asn Val Arg Asp Gly Gly Pro Met Glu Leu Thr 175 180 185 190			639
gaa gaa guc guu gau gag uuc aug gaa gau guc ccu aug ucg auc agg Glu Glu Val Val Asp Glu Phe Met Glu Asp Val Pro Met Ser Ile Arg 195 200 205			687
cuu gca aag uuU cga ucu cga acc gga aaa aag agu gau guc cgc aaa Leu Ala Lys Phe Arg Ser Arg Thr Gly Lys Lys Ser Asp Val Arg Lys 210 215 220			735
ggg aaa aaU agu agu aaU gau cgg uca gug ccg aac aag aac uau aga Gly Lys Asn Ser Ser Asn Asp Arg Ser Val Pro Asn Lys Asn Tyr Arg 225 230 235			783
aaU guu aag gau uuU gga gga aug agu uuU aaa aag aaU aaU uua auc Asn Val Lys Asp Phe Gly Gly Met Ser Phe Lys Lys Asn Asn Leu Ile 240 245 250			831
gau gau gau ucg gag gcu acu guc gcc gaa ucg gau ucg uuU Asp Asp Asp Ser Glu Ala Thr Val Ala Glu Ser Asp Ser Phe 255 260 265			873

uaaaauacgcu cgacgagauu uucaggagcu aaggaagcua aa aug gag aaa aaa	927
Met Glu Lys Lys	
270	
auc acu gga uau acc acc guu gau aua ucc caa ucg cau cgu aaa gaa	975
Ile Thr Gly Tyr Thr Thr Val Asp Ile Ser Gln Ser His Arg Lys Glu	
275 280 285	
cau uuu gag gca uuu cag uca guu gcu caa ugu acc uau aac cag acc	1023
His Phe Glu Ala Phe Gln Ser Val Ala Gln Cys Thr Tyr Asn Gln Thr	
290 295 300	
guu cag cug gau auu acg gcc uuu uua aag acc gua aag aaa aa uag	1071
Val Gln Leu Asp Ile Thr Ala Phe Leu Lys Thr Val Lys Lys Asn Lys	
305 310 315 320	
cac aag uuu uau ccg gcc uuu auu cac auu cuu gcc cgc cug aug aa u	1119
His Lys Phe Tyr Pro Ala Phe Ile His Ile Leu Ala Arg Leu Met Asn	
325 330 335	
gcu cau ccg gaa uuc cgu aug gca aug aaa guu uuc cau gag caa acu	1167
Ala His Pro Glu Phe Arg Met Ala Met Lys Val Phe His Glu Gln Thr	
340 345 350	
gaa acg uuu uca ucg cuc ugg agu gaa uac cac gac gau uuc cgg cag	1215
Glu Thr Phe Ser Ser Leu Trp Ser Glu Tyr His Asp Asp Phe Arg Gln	
355 360 365	
uuu cua cac aua uau ucg caa gau gug gcg ugu uac ggu gaa aac cug	1263
Phe Leu His Ile Tyr Ser Gln Asp Val Ala Cys Tyr Gly Glu Asn Leu	
370 375 380	
gcc uau uua ccu aaa ggg uuu auu gag aa u aug uuu uuc guc uca gcc	1311
Ala Tyr Leu Pro Lys Gly Phe Ile Glu Asn Met Phe Phe Val Ser Ala	
385 390 395 400	
aa uccc ugg gug agu uuc acc agu uuu gau uua aac gug gcc aa u aug	1359
Asn Pro Trp Val Ser Phe Thr Ser Phe Asp Leu Asn Val Ala Asn Met	
405 410 415	
gac aac uuc uuc gcc ccc guu uuc acc aug ggc aaa uau uau acg caa	1407
Asp Asn Phe Phe Ala Pro Val Phe Thr Met Gly Lys Tyr Tyr Thr Gln	
420 425 430	
ggc gac aag gug cug aug ccg cug gcg auu cag guu cau cau gcc guc	1455
Gly Asp Lys Val Leu Met Pro Leu Ala Ile Gln Val His His Ala Val	
435 440 445	
ugu gau ggc uuc cau guc ggc aga aug cuu aa u gaa uua caa cag uac	1503
Cys Asp Gly Phe His Val Gly Arg Met Leu Asn Glu Leu Gln Gln Tyr	
450 455 460	
ugc gau gag ugg cag gcc ggg gcg uaa uuuuuuuuag gcaguauug	1550
Cys Asp Glu Trp Gln Gly Gly Ala *	

465

470

gugccuuaaa cgccuggugc uacgccugaa uaagugauaa uaagcgggag aauggcagaa 1610
 auucgucgag gguagucaag augcauaaau aauaacggau uguguccgua aucacacgug 1670
 gugcguacga uaacgcgauag uguuuuuuccc uccacuuaaa ucgaaggggu gugucuugga 1730
 ucgcgcgggu caaanguaau ugguucauau acauccgcag gcacguaaau aagcgagggg 1790
 uucgaaucucc ccgguuaccc ccgguagggg ccca 1824

<210> 2

<211> 268

<212> PRT

<213> Tobacco Mosaic Virus

<400> 2

Met Ala Leu Val Val Lys Gly Lys Val Asn Ile Asn Glu Phe Ile Asp
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 Leu Thr Lys Met Glu Lys Ile Leu Pro Ser Met Phe Thr Pro Val Lys
 20 25 30
 Ser Val Met Cys Ser Lys Val Asp Lys Ile Met Val His Glu Asn Glu
 35 40 45
 Ser Leu Ser Glu Val Asn Leu Phe Lys Gly Val Lys Leu Ile Asp Ser
 50 55 60
 Gly Tyr Val Cys Leu Ala Gly Leu Val Val Thr Gly Glu Trp Asn Leu
 65 70 75 80
 Pro Asp Asn Cys Arg Gly Gly Val Ser Val Cys Leu Val Asp Lys Arg
 85 90 95
 Met Glu Arg Ala Asp Glu Ala Thr Leu Gly Ser Tyr Tyr Thr Ala Ala
 100 105 110
 Ala Lys Lys Arg Phe Gln Phe Lys Val Val Pro Asn Tyr Ala Ile Thr
 115 120 125
 Thr Gln Asp Ala Met Lys Asn Val Trp Gln Val Leu Val Asn Ile Arg
 130 135 140
 Asn Val Lys Met Ser Ala Gly Phe Cys Pro Leu Ser Leu Glu Phe Val
 145 150 155 160
 Ser Val Cys Ile Val Tyr Arg Asn Asn Ile Lys Leu Gly Leu Arg Glu
 165 170 175
 Lys Ile Thr Asn Val Arg Asp Gly Gly Pro Met Glu Leu Thr Glu Glu
 180 185 190
 Val Val Asp Glu Phe Met Glu Asp Val Pro Met Ser Ile Arg Leu Ala
 195 200 205
 Lys Phe Arg Ser Arg Thr Gly Lys Lys Ser Asp Val Arg Lys Gly Lys
 210 215 220
 Asn Ser Ser Asn Asp Arg Ser Val Pro Asn Lys Asn Tyr Arg Asn Val
 225 230 235 240
 Lys Asp Phe Gly Gly Met Ser Phe Lys Lys Asn Asn Leu Ile Asp Asp
 245 250 255
 Asp Ser Glu Ala Thr Val Ala Glu Ser Asp Ser Phe
 260 265

<210> 3

<211> 204

<212> PRT

<213> Tobacco Mosaic Virus

<400> 3

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		20						25					30		
Tyr	Asn	Gln	Thr	Val	Gln	Leu	Asp	Ile	Thr	Ala	Phe	Leu	Lys	Thr	Val
	35						40					45			
Lys	Lys	Asn	Lys	His	Lys	Phe	Tyr	Pro	Ala	Phe	Ile	His	Ile	Leu	Ala
	50					55					60				
Arg	Leu	Met	Asn	Ala	His	Pro	Glu	Phe	Arg	Met	Ala	Met	Lys	Val	Phe
65					70				75						80
His	Glu	Gln	Thr	Glu	Thr	Phe	Ser	Ser	Leu	Trp	Ser	Glu	Tyr	His	Asp
			85						90					95	
Asp	Phe	Arg	Gln	Phe	Leu	His	Ile	Tyr	Ser	Gln	Asp	Val	Ala	Cys	Tyr
			100					105						110	
Gly	Glu	Asn	Leu	Ala	Tyr	Leu	Pro	Lys	Gly	Phe	Ile	Glu	Asn	Met	Phe
		115						120						125	
Phe	Val	Ser	Ala	Asn	Pro	Trp	Val	Ser	Phe	Thr	Ser	Phe	Asp	Leu	Asn
	130					135					140				
Val	Ala	Asn	Met	Asp	Asn	Phe	Phe	Ala	Pro	Val	Phe	Thr	Met	Gly	Lys
145					150					155					160
Tyr	Tyr	Thr	Gln	Gly	Asp	Lys	Val	Leu	Met	Pro	Leu	Ala	Ile	Gln	Val
			165					170						175	
His	His	Ala	Val	Cys	Asp	Gly	Phe	His	Val	Gly	Arg	Met	Leu	Asn	Glu
			180					185					190		
Leu	Gln	Gln	Tyr	Cys	Asp	Glu	Trp	Gln	Gly	Gly	Ala				
		195					200								